

# **MISCELLANEOUS ELECTRICAL VOLUMES I**

## **FIST VOLUMES 3-11 THROUGH 3-15**

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**Engineering Division  
Facilities Engineering Branch  
Denver Office**

*The Appearance of the Internet Version of This Manual  
May Differ From the Original, but the Contents Do Not*

**UNITED STATES DEPARTMENT OF THE INTERIOR**

**BUREAU OF RECLAMATION**

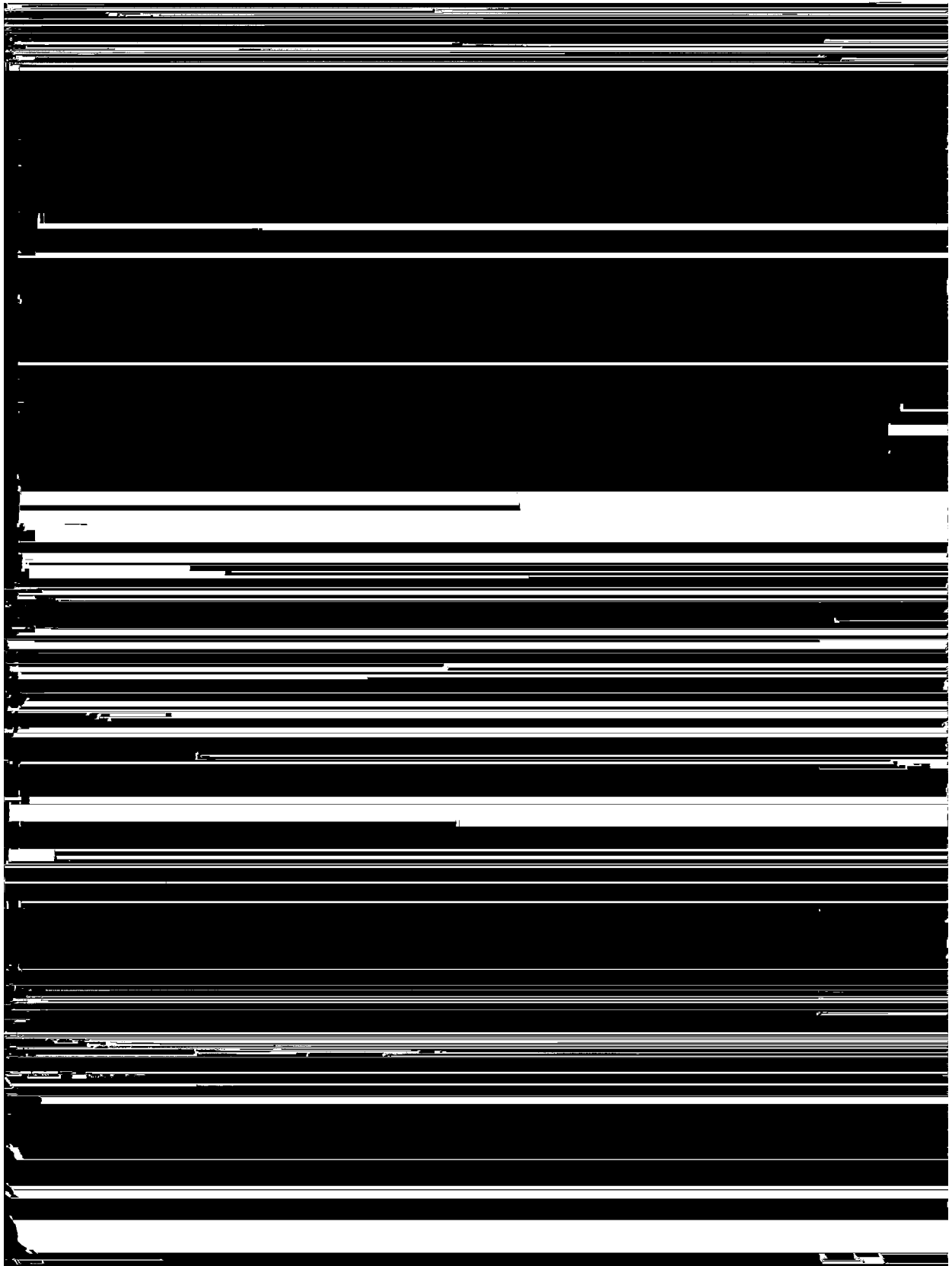
# **MISCELLANEOUS ELECTRICAL VOLUMES I**

## **CONTENTS**

## **FACILITIES INSTRUCTIONS, STANDARDS,**

## **Generator Thrust-bearing Insulation and Oil Film Resistance**

The thrust and upper-guide bearings of large vertical generators are insulated from the frame to prevent circulating current from passing through the bearing surfaces which might damage them. Test terminals are provided for periodic ohmmeter checks across the thrust bearing insulation. Some generators have



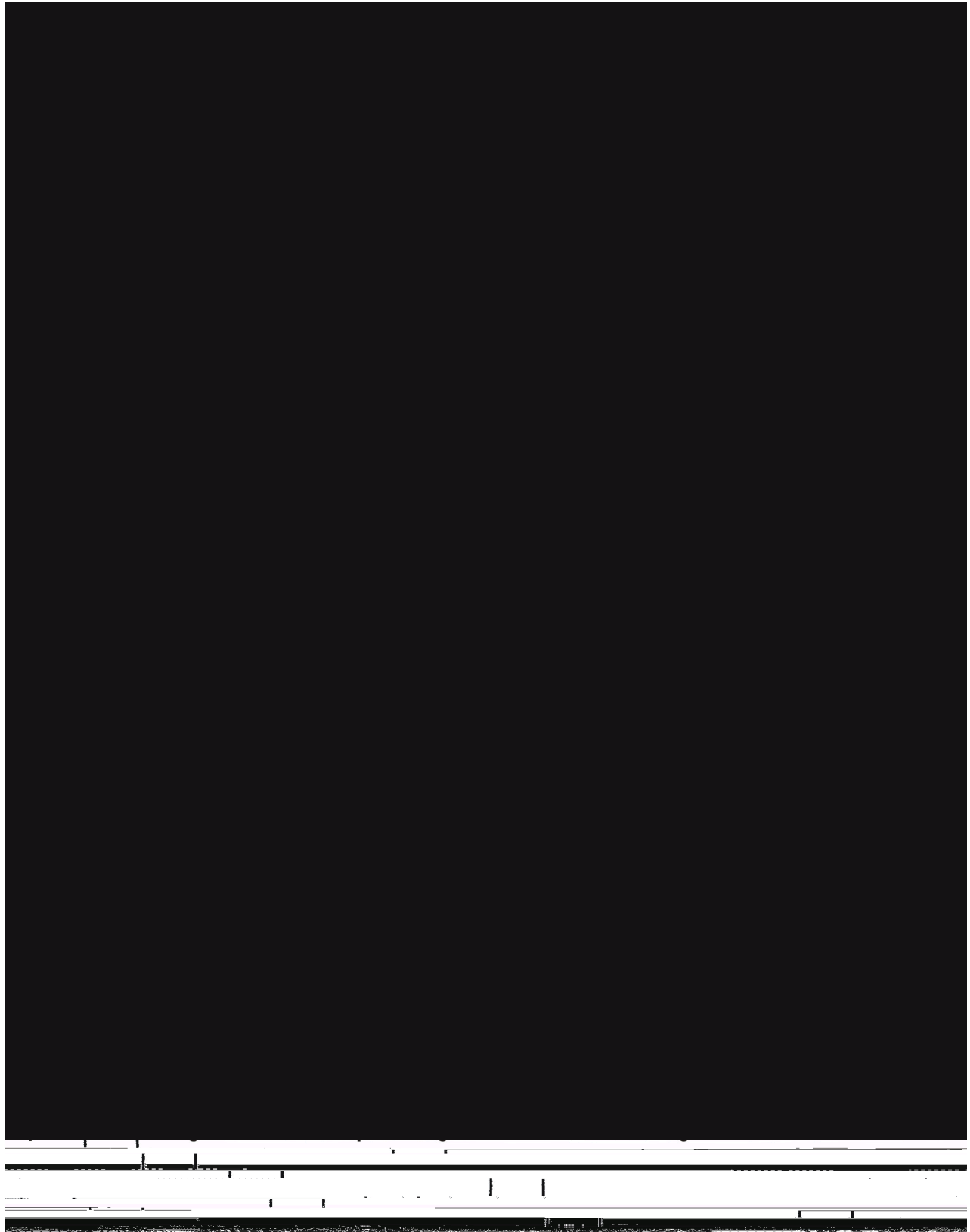


# **CORRECTING THE RATIO AND PHASE ANGLE CHARACTERISTICS OF BUSHING CURRENT TRANSFORMERS**

Fairly accurate current, watt, or var readings or  
recordings



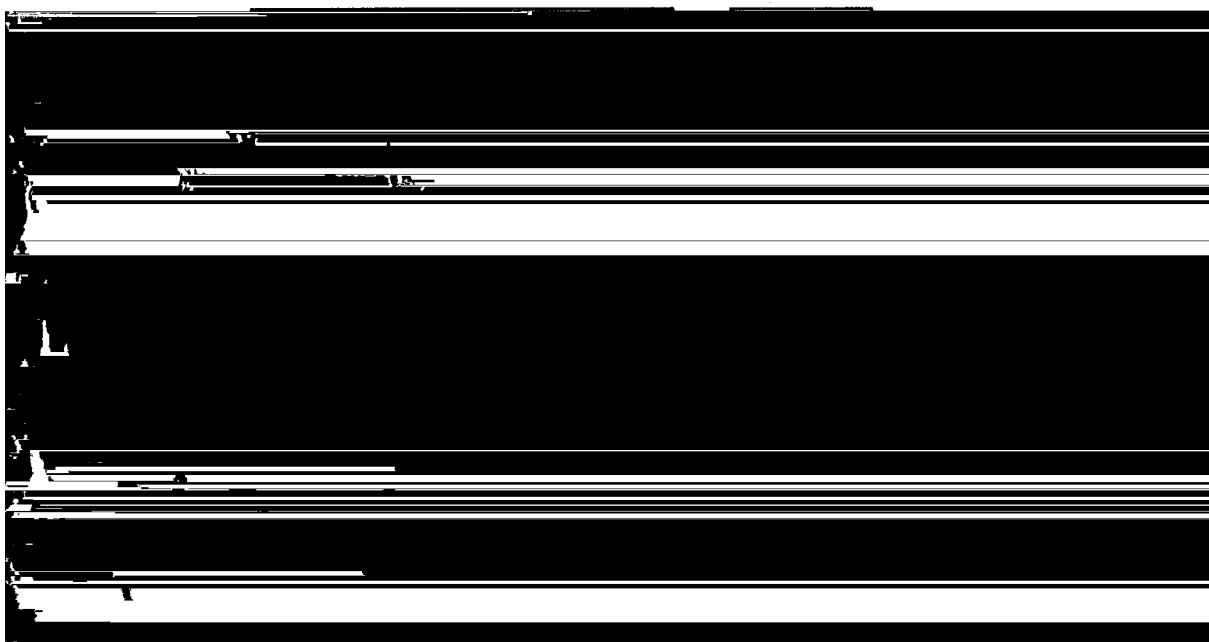




**FACILITIES INSTRUCTIONS, STANDARDS,  
& TECHNIQUES**

**Volume 3-13**

**AN ELECTRICAL METHOD OF MOVING  
A GENERATOR ROTOR**







**FACILITIES INSTRUCTIONS, STANDARDS,  
& TECHNIQUES**

**Volume 3-14**

**COMMUTATOR AND COLLECTOR RING  
PERFORMANCE**

# Commutator and Collector Ring Performance

Commutator and collector ring problems on exciters of hydrogenerators, which have been most prevalent in Reclamation experience, are often misunderstood. This discussion, although by no means a full treatment of this complex and lengthy subject, gives some basic elements of an adequate maintenance program. The literature listed in the bibliography, only a segment of that which has been published, should be available to maintenance personnel on each project. Troubles which cannot be readily corrected should be referred to D-8440 or D-8450.

Good



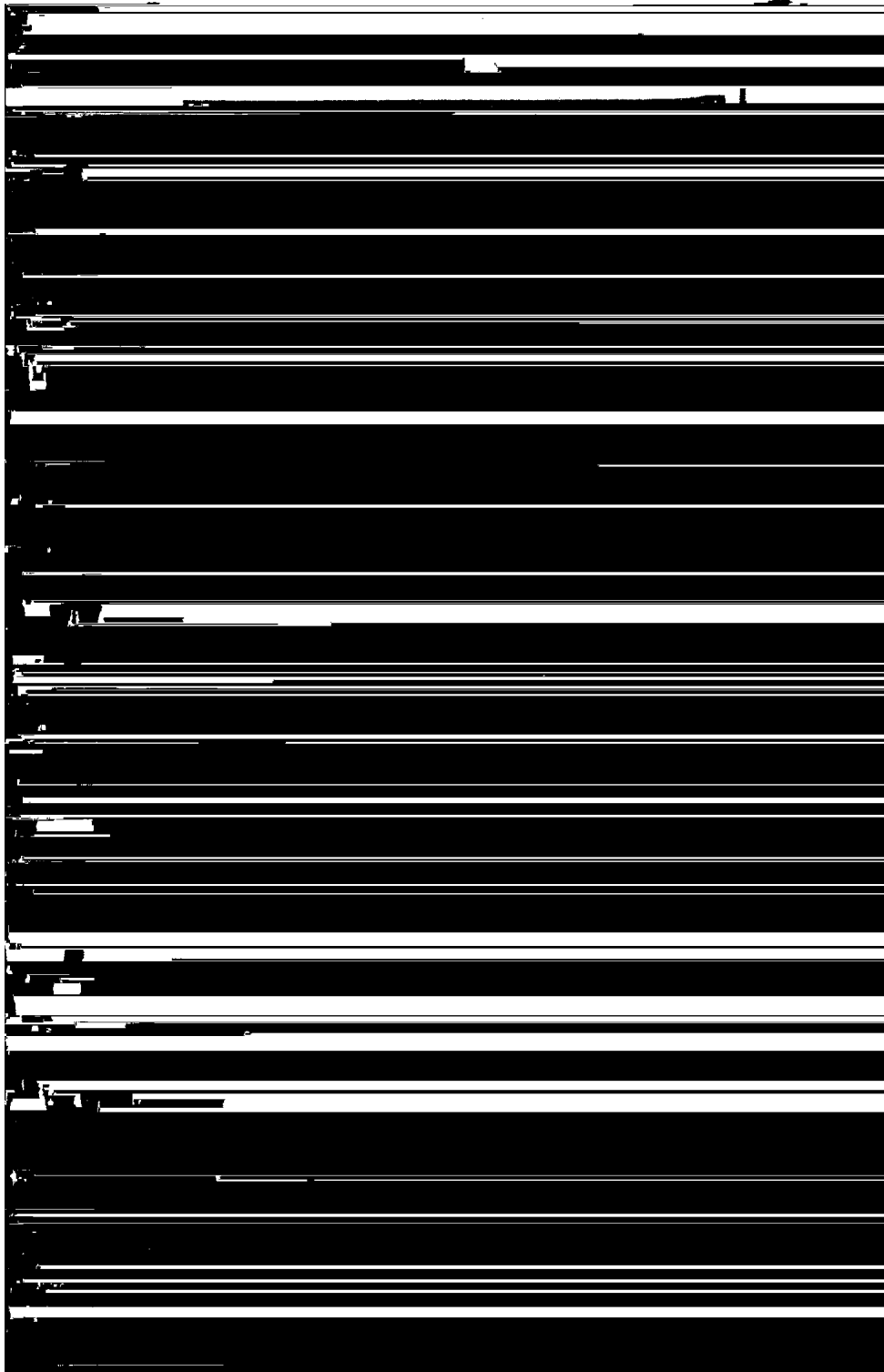


## **FACILITIES INSTRUCTIONS, STANDARDS,**

## **FIBER-OPTIC DETECTOR**

Severe arcing from brushes on hydroelectric generator rings has occurred on several Reclamation generators. If this arcing is not detected soon after it develops, the arc travels between the brushes and may cause considerable damage to the collector rings and brush holders. If this situation were to be unnoticed, as it could be in





**Figure 2. - Fiber-Optic Printed Circuit Board**